THE CLAIMS

What is claimed:

1. An implant for fixation of a bone comprising:

a shaft having a proximal end and a distal end, the shaft defining a longitudinal axis between the proximal end and the distal end; and

a plurality of blades disposed on at least a portion of the shaft and helically twisted about the longitudinal axis, the plurality of blades having a proximal end and a distal end;

wherein at least one of the blades has a variable blade width that varies in a direction along the longitudinal axis.

2. The implant of claim 1, wherein the variable blade width increases in a direction from the blade proximal end toward the blade distal end.

3. The implant of claim 1, wherein at least one of the blades has a variable blade height that varies in a direction along the longitudinal axis.

4. The implant of claim 1, wherein at least one of the blades has a substantially constant blade width.

5. The implant of claim 1, wherein the plurality of blades twist about 90° about the longitudinal axis.

6. The implant of claim 3, wherein the variable blade height increases in a direction from the blade proximal end toward the blade distal end.

7. The implant of claim 3, wherein at least one of the blades has a substantially constant blade height.

8. The implant of claim 1, wherein the plurality of blades comprises:

at least first and second blades substantially diametrically opposed from one another about the longitudinal axis; and

at least third and fourth blades substantially diametrically opposed from one another about the longitudinal axis;

wherein at least one of the first and second blades has a variable blade width that increases in a direction along the longitudinal axis, and at least one of the third and fourth blades has a variable blade height that increases in a direction along the longitudinal axis.

9. The implant of claim 6, wherein the variable blade height is substantially zero at the blade proximal end.

10. The implant of claim 9, wherein:

at least one of the first and second blades has a substantially constant blade height; and

at least one of the third and fourth blades has a substantially constant blade width.

11. The implant of claim 10, wherein:

the first and second blades have a variable blade width that increases in a direction along the longitudinal axis, and a substantially constant blade height;

the third blade has a variable blade height that increases in a direction along the longitudinal axis, and a substantially constant blade width; and

the fourth blade has a substantially constant blade height, and a substantially constant blade width.

12. The implant of claim 11, wherein the first and second blades are out of phase with the third and fourth blades by about 90° about the longitudinal axis.

13. An implant for fixation of a bone comprising:

a shaft defining a longitudinal axis of the implant, the shaft including a bladed portion and a non-bladed portion, the bladed portion and the non-bladed portion each defining a diameter;

a plurality of blades disposed on the bladed portion and helically twisted about the longitudinal axis, wherein the maximum diameter of the bladed portion is smaller than the maximum diameter of the non-bladed portion.

14. The implant of claim 13, wherein the non-bladed portion includes a tapered region located substantially adjacent the bladed portion, wherein the tapered region defines a tapered region diameter that decreases in a direction toward the bladed portion.

15. The implant of claim 14, wherein the tapered region further defines a neck diameter at a point substantially adjacent the blades, wherein the neck diameter is smaller than the blade diameter.

16. The implant of claim 14, wherein the implant has proximal and distal ends located on the longitudinal axis, and the bladed portion is located substantially adjacent one of the ends.

17. A mechanism for coupling a first fracture fixation implant to a second fracture fixation implant, comprising:

a body member receivable in the first implant, the body member including a single prong extending from the body member for contacting a surface of the second implant; and

a drive member rotatably coupled to the body member, the drive member configured and dimensioned for threadable engagement with the first implant;

wherein the drive member urges the body member toward the second implant such that the single prong contacts the surface of the second implant and substantially prevents rotation of the second implant with respect to the first implant.

18. The mechanism of claim 17, wherein the single prong limits sliding of the second implant with respect to the first implant.

19. The mechanism of claim 18, wherein:

the single prong defines a first engagement surface;

the second implant defines a second engagement surface; and

the first and second engagement surfaces interact to substantially prevent rotation of the second implant with respect to the first implant.

20. The mechanism of claim 19, wherein the second engagement surface defines a first end and a second end longitudinally spaced from the first end, and includes stops

formed adjacent at least one of the ends for contacting the prong to prevent further sliding of the second implant.

21. The mechanism of claim 17, wherein the body member includes a substantially cylindrical portion defining a longitudinal axis of the body member, and the single prong extends in a direction substantially parallel to the longitudinal axis.

22. An implant system for fixation of a fractured bone, comprising:

a first implant defining a first longitudinal axis, the first implant further defining a channel and a bore in communication with the channel, the bore disposed at a predetermined angle with respect to the first longitudinal axis;

a second implant defining a second longitudinal axis, the second implant slidable along the second longitudinal axis within the bore; and

a body member receivable in the channel, and including at least one prong for contacting the second implant to substantially prevent rotation of the second implant with respect to the first implant about the second longitudinal axis;

wherein the prong and second implant are configured and dimensioned to limit sliding of the second implant to a predetermined distance along the second longitudinal axis.

23. The implant system of claim 22, further comprising a drive member rotatably coupled to the body member, the drive member configured and dimensioned for threadable engagement within the channel to selectively position the body member against the second implant.

24. The implant system of claim 23, wherein when the body member and drive member are received in the channel, a cannulation is defined through the first implant, body member, and drive member such that a guide wire may be inserted completely through the cannulation.

25. The implant system of claim 22, wherein the prong defines a first engagement surface, and the second implant defines a second engagement surface for contacting the first engagement surface to substantially prevent rotation of the second implant and to limit sliding of the second implant to the predetermined distance.

26. The implant system of claim 25, wherein the first engagement surface defines a first end and a second end longitudinally spaced from the first end, and includes stops formed adjacent at least one of the ends for contacting the prong to prevent further sliding of the second implant.

27. The implant system of claim 22, wherein the body member includes at least two prongs each defining a first engagement surface, and the second implant defines at least two second engagement surfaces.

28. The implant system of claim 27, wherein at least one of the prongs is longer than another one of the prongs.

29. The implant system of claim 22, wherein the first implant is an intramedullary nail.

30. The implant system of claim 22, wherein the second implant includes a plurality of helically twisted blades disposed thereon.

31. A mechanism for coupling a first fracture fixation implant to a second fracture fixation implant, comprising:

a body member receivable in the first implant, the body defining a longitudinal axis of the mechanism;

a first prong extending from the body member for contacting a first surface of the second implant, the first prong defining a first prong length along the longitudinal axis;

a second prong extending from the body member for contacting a second surface of the second implant, the second prong defining a second prong length along the longitudinal axis;

wherein the second prong length is substantially longer than the first prong length.

32. The mechanism of claim 31, wherein the first and second prongs are substantially parallel to one another.

33. The mechanism of claim 31, further comprising a drive member for urging the body member toward the second implant such that the first and second prongs contact the first and second engagement surfaces respectively to substantially prevent rotation of the second implant with respect to the first implant.